

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

2SD2130

MICRO MOTOR DRIVE, HAMMER DRIVE APPLICATIONS.

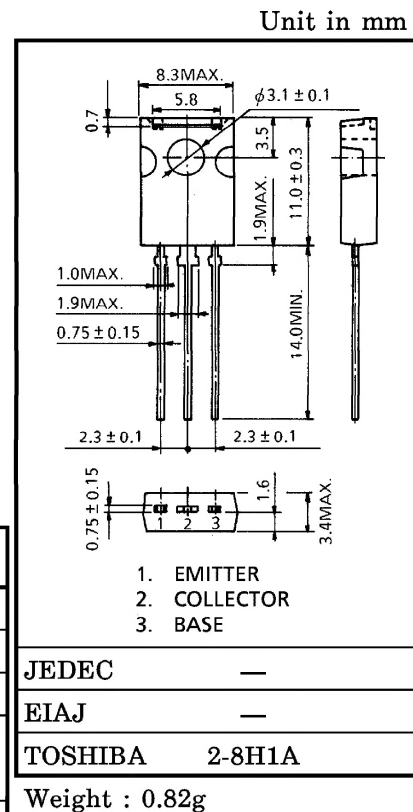
SWITCHING APPLICATIONS.

POWER AMPLIFIER APPLICATIONS.

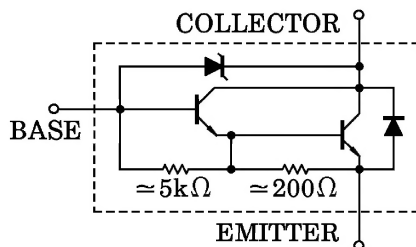
- High DC Current Gain
: $h_{FE} = 2000$ (Min.) ($V_{CE} = 2V$, $I_C = 1A$)
- Low Saturation Voltage
: $V_{CE(sat)} = 1.5V$ (Max.) ($I_C = 3A$, $I_B = 10mA$)
- Zener Diode Included Between Collector and Base.

MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	60 ± 10	V
Collector-Emitter Voltage		V_{CEO}	60 ± 10	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	± 4	A
	Pulse	I_{CP}	± 6	
Base Current		I_B	0.5	A
Collector Power Dissipation	$T_a = 25^\circ C$	P_C	1.5	W
	$T_c = 25^\circ C$		10	
Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



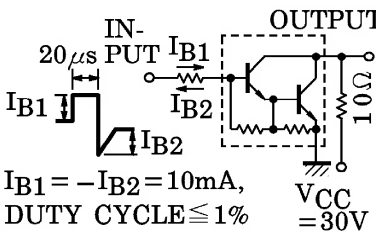
EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 45V, I_E = 0$	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 6V, I_C = 0$	0.6	—	2.0	mA
Collector-Base Breakdown Voltage		$V_{(BR) CBO}$	$I_C = 10mA, I_E = 0$	50	60	70	V
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 10mA, I_B = 0$	50	60	70	V
Emitter-Base Breakdown Voltage		$V_{(BR) EBO}$	$I_E = 10mA, I_C = 0$	6	—	—	V
DC Current Gain		$h_{FE} (1)$	$V_{CE} = 2V, I_C = 1A$	2000	—	15000	
		$h_{FE} (2)$	$V_{CE} = 2V, I_C = 3A$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 3A, I_B = 10mA$	—	—	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 3A, I_B = 10mA$	—	—	2.0	V
Transition Frequency		f_T	$V_{CE} = 2V, I_C = 0.5A$	—	60	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	30	—	pF
Switching Time	Turn-on Time	t_{on}	 <p>IN-PUT I_{B1} I_{B2} OUTPUT 10Ω $V_{CC} = 30V$</p> <p>$I_{B1} = -I_{B2} = 10mA$, DUTY CYCLE $\leq 1\%$</p>	—	0.2	—	μs
	Storage Time	t_{stg}		—	3.0	—	
	Fall Time	t_f		—	0.5	—	

